GARDEN AND FOREST.

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Early Flowers.

A CORRESPONDENT who writes some pleasant words about the frequent advice given in Garden and Forest to use more shrubs and herbaceous plants which bloom very early in the spring, remarks that while it is delightful to sit in an easy-chair before a grate-fire and read about gardening of this sort, it has many drawbacks in actual practice. There are sturdy little flowers that will brave the frosts of early March in this climate, but human beings are not quite as hardy as Snowdrops, and it is often impossible to enjoy these where they grow without the danger of contracting influenza or rheumatism. In the slow progress of an English spring, March does not differ materially from May, and the garden is not an utterly inhospitable and unwholesome place in February. But the historic blizzard that we all remember swept down upon us in March, and this is the season when the mud in country roads is hub-deep, while the ground freezes every night and thaws every day, with snow-squalls imminent any afternoon, and with rarely more than a few hours together, now and then, which have in them any warmth or genial promise. In the face of such discomforts it requires some heroic determination to tramp over spongy turf in overshoes to hunt up a flower, here and there, from little plants that have been naturalized in the grass or in a wood border. No doubt, there is some force in this view of the case, and elderly persons of rheumatic diathesis and persons of any age with a tendency to lung trouble would preferably be in Florida or southern California in the very earliest days of our so-called spring. Again, there are many persons who live in cities during the winter, and it may be advisable not to spend much thought on the decoration of home grounds at a season when none of the family can enjoy them, but to reserve all serious effort to brighten up the garden until a few weeks later. But frost and wind have few terrors for the enthusiast who wishes to test varieties of Reticulate Irises or certain new Scillas, Chionodoxas and others of the very earliest flowers; and even those who are not enthusiasts, and only care for a few specimens of the species and varieties which will make the most attractive show, are sure to find a certain distinct pleasure in the cultivation of these very early flowers which the later ones never afford. The very hardships which these daring plants endure arouse our sympathy, their fragile appearance increases our regard for them, and, besides the welcome they receive as the forerunners of the abundant beauty which is to come as the season advances, they have a certain grace and refinement of form and a delicacy and a purity of color that the bigger and more showy developments of summer cannot surpass.

We must repeat, therefore, that, in spite of the many discomforts of the season, every one who lives in the country and has any garden whatever should arrange to make as much as possible of the early flowers, if not the very earliest, and have a spring garden. Many shrubs give a considerable floral display in early April, and these would make an appropriate border for such a garden, and many trees like Prunus Davidiana, our Swamp Maples, and a little later on the Redwood would show well in the background. Corylopsis pauciflora, with its pale yellow flowers, a relative of our Witch Hazel, is among the earliest shrubs to bloom, and C. spicata, which is hardy as far north as Philadelphia, has more showy flowers, with a distinct and pleasing fragrance. The early Jessamine has long arching branches covered with bright yellow flowers, and this, too, is hardy at Philadelphia. The Cornelian Cherry is a neglected shrub which flowers very early, and it is an interesting shrub all the year through, especially in the later season when its abundant cherry-like fruit is well colored. A little later Fothergilla Gardeni, a native of our southern Alleghanies, begins to show tufts of long white stamens at the extremities of its branches before the leaves appear. The Japanese Andromeda, with its panicles of elegant white flowers, and our still more beautiful Andromeda floribunda, both evergreen shrubs, are sufficiently beautiful for any situation. Neither the Yellow-root, Zanthorhiza, or Leatherwood has very conspicuous flowers, but they bloom early and would be useful in such a collection, and so would our native Currant, Ribes aureum, as well as R. alpinum and R. saxatile, all of which have handsome and fragrant flowers. For rock-work there is the lovely Trailing Arbutus and the sturdy little Heath, Erica carnea, and other shrubs might be named, like Daphne Mezereum and the bush Honeysuckles, Lonicera fragrantissima and L. Standishii, the Forsythias and our native Spice-bush, but these will suffice to brighten the shrub border until Spiræa Thunbergii and the great mass of spring-flowering shrubs begin to bloom.

A few of the hardy, herbaceous plants which were brightening Mrs. Dandridge's garden a fortnight ago are named in another column. Mr. Gerard has been telling us for weeks that there are many Irises of singular beauty and effectiveness, not to speak of the hundreds of varieties of bulbous plants which can be counted on for a display at this season. Many of these flowers are the perfection of delicacy in form and color, and they seem all the more satisfying because there are no other flowers to distract our attention or to compete with them for notice and admiration. A little garden of these early flowers in some sheltered spot never fails to please, and when no separate place is provided for them, and they are tucked away here and there at the base of a rock or along a wildwood path, they give us the added pleasure of a surprise as we come upon them unexpectedly. We have so often named the species most suitable for this climate that readers are referred to the indices of former volumes of this journal. Bulbophyllums, Grape Hyacinths, Spring Snowflakes and Frittilarias; Anemones, Violets, Trilliums, Bellworts, Globe Flowers, Adonis, Corydalis, Cowslips, Primroses, Ranunculus, Epimediums, Eranthis, Iceland Poppies—these are the names, in addition to those mentioned elsewhere in this number, which will first occur to one who thinks of a Spring Garden, and most of them are found in many varieties. But what the novice needs most is to make a beginning, and the time will soon come when his anxiety will

not be that he cannot find plants enough for his early garden, but that he has no room for even a small portion of those which he thinks he cannot get along without.

It is a misfortune that the effort to induce the authorities of California to recede the Yosemite Valley to the United States has failed. A bill drawn for that purpose was approved by the proper committee of the California Legislature, but was lost when it came before the House. Perhaps some of the criticisms upon the management of this wonderful valley have been too severe, but its sublimity as a whole, with the delicacy and beauty of its details, belongs of right to the people of the Union, and they do well to be critical when men without taste or training assume to improve such scenery. It is plain that the authorities of California have never realized the fact that the poetic charm of this place has an untold value and that there should be a complete and consistent policy of administration devised by artists in landscape design—that is, by men who not only "have good taste," as the saying is, but who have studied problems of this kind, who comprehend what are the essential features which it is necessary to preserve, and who know how to treat the controlling elements of the scenery. It is no wonder that the people of the country read with horror that undisciplined men were turned loose at times with axes to clear away the underbrush and chop down trees, or that portions of the land had been leased out to hay contractors and hedged off by barbed wire fences. As we have said before, this scenery, unique for its combination of grandeur and beauty, belongs to the people, and it ought to be controlled by the Government, which represents all the people. There has been a special reason for this since the United States has established a forest reservation sweeping all about the valley and leaving this state property completely isolated. There is still more reason now since the establishment of so many more reservations by President Cleveland, for the increased importance of the reservations will necessitate the establishment of some fixed policy and will hasten the enactment of some some sort of law for the government of these great tracts. This is understood as well in California as anywhere else, and many citizens of that state are strongly in favor of the proposed recession. Let us hope that when the measure once more comes before the legislature of that state the restoration of the land to its proper ownership will be accomplished.

The Garden in Relation to the House.

At the meeting of the Royal Institute of British Architects, held on Monday, February 15th, 1897, Mr. H. E. Milner, the well-known English landscape-gardener, and Honorary Associate of the Institute, read a paper on "The Garden in Relation to the House." As this is a subject which is now interesting both architects and landscape-gardeners in this country as well as in England, an abstract of the paper may not be unwelcome.

Mr. Milner said that he did not propose to set forth a history of gardening in England, but to state his own opinion as to the treatment to be adopted in laying out private grounds, particularly in regard to their more immediate relation to the house, and to indicate generally a practical application of the theories advanced. The utilitarian and necessarily small and formal garden enclosure of the middle ages was spoken of, and its gradual enlargement, until a high state of development was reached under Elizabeth, when the architect who designed the house, laid out the garden as well, with its fore-court and broad terrace, and its straight walks all harmonizing with the building. Yet the garden was still enclosed and little thought given to the treatment of the country outside, beyond the planting of avenues. In the end of the seventeenth century design began to deteriorate, and the ideal sought for was intricacy of parts, repetition and vagaries. Soon came a reaction, and toward the end of the last century fashion ruled the destruction of most of the old formal gardens, to be replaced by a no less artificial imitation of nature. The designers, at this time, were not content with amalgamating whatever was good of the old work, with a natural treatment of the outlying ground, or of giving greater breadth to the existing formal work, but swept all this away and replaced it by meaningless walks; by clumps of trees and shrubs dotted irregularly on the lawn and park; by a boundary of planting; by imitation of bits of natural scenery or the introduction of artificial ruins and such like objects, with the desire of making a picturesque landscape.

Mr. Milner then spoke of the happy mean where the art of both schools should go hand in hand, the architect designing the stone or brick walls, steps and terraces, the landscape gardener taking charge of all the arrangements of verdure, and composing the wider picture. The author then pointed out the danger that the liberal art of true formal gardening might degenerate into a mechanical one in which problems are all treated after a certain set rule. Upon this point he said:

It must be borne in mind that places differ much in climate, in soil, in the requirements of the owner, in the amount to be expended, and in the possibility of an extension beyond their immediate precincts. It would, therefore, seem futile to lay down any hard and fast rules for design, for that which would be suitable for a plain would be inapplicable to a hillside; that which would be fitting to a peaty hollow would be wrong on a chalky slope; that which would satisfy the poor man would hardly be deemed sufficient indication of the wealth of a proud possessor; that which would inclose an oasis from the surroundings of factories, might shut off the lovely view of hill, dale and water, and imprison the dweller within a wall—possibly charming in itself, but tiring by restraining the eye from wandering to the unseen and glorious beyond.

In dealing with the details of the site, the approach, the terrace, the garden formation and planting, Mr. Milner spoke of the most advantageous aspect for a house in different parts of England, and his recommendation of a hillside rather than a hilltop for the location of a house is one which we would do well to take to heart:

The approach to a house should always appear to be direct, and any deviation from such directness should not only arise from, but should also be made to arise from, some decided obstacle. By direct is not meant straight. A straight approach requires careful treatment. It is artificial in character; it can appropriately be used when an imposing or somewhat pretentious building is at the end of it, or when the distance is short and when the country is flat. In sloping ground it should, if possible, be made against the slope of a hill. The gradient should be even and flat, or very slightly and continuously curved, otherwise it will appear not straight. If the ground is very undulating, a straight road is out of character with its surroundings. It may be worth mentioning that in laid-out grounds of Tudor times, even where an avenue has been planted, the drive has followed a curved line to the fore-court of the house. A curved line of road is generally to be preferred, for it is more easy of construction, more varied views can be obtained, its gradient can be varied, following within limitations the natural undulation of the ground, and the side slopes can be more easily and freely dealt with than the sides of a straight drive. At the entrance from the public road, and also where the road reaches the house, the route should be nearly level and the line straight. It should rise toward the house when approaching it directly, and it should be level at crossings or junctions. It should not run parallel with the public road with the mere purpose of lengthening the course, or seeming to prolong it, though, when the house is at a much higher level and the object is apparent, this resource must be sometimes adopted.

Having touched upon the engineering of road gradients and construction, Mr. Milner spoke as follows of the lodge and entrance gates and terraces:

These belong to the drive and should be parallel with it and at right angles to it, as distinguished from the highway. The face-line of the lodge should be at least ten feet from the edge of the drive, and its windows should be able to command the entrance and a certain length of drive. On entering by the drive it is advisable to create a good impression, and therefore the difference between the dusty highway and the shaded, well-trimmed drive within the gates should be distinctly

marked. Planting may be introduced on either side of the entrance, but once well inside, a view should be given of the outlying grounds, or stretch of park, or distant wood. A curved drive should not be planted continuously, but broad masses of planting may be introduced, at first to shut off the highway, at turns in the drive, and on the top or slopes of knolls round which the drive may wind.

The treatment of the terrace depends very much on the architectural character of the building. By "terrace" I mean not only the narrow strip of level ground placed parallel with the house, or the more stately portion—often with architectural adornments—that is laid out along the face of the structure, but the whole of the ground that forms the base or setting of the building. A great divergence between the work of English and foreign landscape-gardeners is to be seen in their several methods of dealing with the ground immediately surrounding the house. In England we insist that the treatment of the ground next it shall be artistically formal, with regular lines of turf, wall, slope, walk or bed, all displaying harmony, as far as may be, with its architectural character. On the Continent, with some important and notable exceptions, they surround the house with broad, irregularly curved spaces or walks that have nothing in common with the design of the structure. By one practice the endeavor is to give a base to the building and to create on the contiguous ground an expression of kindred artistic spirit; by the other, the ground is treated as something apart, and a feeling of unrest is created.

Various forms of terrace were then discussed, and Mr. Milner passed on to the treatment of the garden proper, quoting in part from a book of his own, published about seven years ago: *

So many considerations press in to vary general design in the general plan of a garden that arbitrary dealing by imposition of what may be termed paper designs, however ingenious, is ill-advised. The detailed plan should spring from the site as an adaptation of its natural or created features, and should not be, as it were, forced upon the position, crushing it to an artificial scheme. To copy simply the design of another place is inadmissible. Considerations that rule in this connection are almost infinite—extent, geological formation, soil, existing natural formation or features, climate and aspect, the display of distant beauty, conformity to outside influences, particularly to the requirements of the possessor and the expenditure of money that may be made. It is this important variety of modifying influences, and how they are dealt with, that gives charm to each new work of landscape-gardening and to the development it presents; just as we contemplate a fresh work of the kind in pictorial art, and note how the artist has treated the natural features, the colors and tints and their modifying juxtaposition on the canvas. The painter may, indeed, have his rules as to composition, for the use of his colors and the production of his distances. His picture is not a servile copy of nature in its exact details, but an artistic rendering of the effect of nature, as seen by his educated eye and recorded by his skillful hand. His picture, however, is viewed from the same point; but in the natural pictures created by the landscape-gardener the point of view is on every side; there is no back to his canvas. In each position the object should be one of beauty, of interest and of delight, and its relation to other features and to the whole field of the spectator's vision be closely and truly considered. The landscape-gardener must consider that his colors change and grow; he must realize as he creates his picture that in a few years what now seems like a light green stroke of pigment to the painter may have become a tall tree, beautiful in itself, but of altered beauty, either helping or marring the landscape. He follows nature by adapting or garnering her beauties, and tutoring her, so to speak, to a display of them. But by following nature is not meant a slavish imitation or reproduction of any of her particular scenes. Some are unattractive, some very inappropriate; all are subject to dissimilar conditions, and imitation in nature as well as in art produces pettiness. But the spirit of the beauty of nature, embodied as it were in those of her works or features that express her majesty, simplicity, peacefulness, sweetness, repose, refinement, strength, and variety in form, color, abundance, or any of her modifications as parts of loveliness, should be included and brought into juxtaposition in an ideal scene so far as we are able to promote its natural development.

On the grouping of trees for effect, Mr. Milner says:

When the ground is broken or undulating (either natural or created), advantage should be seized of marking the eminences by planting. Rising ground may be in appearance raised still higher if we cover it with wood. Trees standing singly emphasize falling ground. The brow of an eminence should not be seen above trees. If the brow forms a tedious line, it should be broken by clumps or large masses along its range, and by dividing the line into very unequal parts.

In conclusion, I maintain that we should carry out in the parts surrounding the house the architectural feeling of the design in terraces, walls, steps, basins, beds, and so form a base; that we can still have the dignified and quiet delight of formal work—not a narrow curtailment of the whole design. But I insist that there is in addition a broader treatment beyond—a work difficult to proportion in relation to foreground, to broad lawn-spaces, to grouping and choosing trees and shrubs for effect in size and color, to directing the eye to desired points, to taking advantage of climate and character of the place either natural or acquired, to provision of light and shade in the undulation of the ground, and to a knowledge of horticulture. This art-gardening is, I venture to assert, far beyond the limitations of formal work only, for it can apply the balance and proportion of the matter, and, in addition, present to us a noble conception of art-work, in its execution of outline, surface formation and grouping, and draw into the picture the greater, broader, varied landscape.

Mr. Milner's interesting paper recalls to us the present necessity for remembering that the arts of architecture and landscape-gardening are sisters, not antagonists, and that the work of the architect and landscape-gardener should be done together from the beginning, one supplementing the other, but not, as too often happens, one crowding the other out. The architect is apt to make light of the importance of the treatment of the ground after it passes his own immediate connection with it, and may consider that the landscape-gardener does small justice to the setting of his house. The result can only be satisfactory when the two artists work side by side and in sympathy from the outset, and neither attempting to go beyond his own legitimate limits. There is still too little of this collaboration, and too little sympathy between the professions, each now fearing the interference of the other. It will be a great step in the advancement of both arts when the architect and landscape-gardener shall, as a matter of course, decide on the site of the house together, helping each other to arrange a base for the building; and also when the beauty of broad landscape treatment shall be recognized, as well as its necessity for the completeness of an artistic whole.

New York. *Beatrix Jones.*

* *The Art and Practice of Landscape-gardening.* By Henry Ernest Milner. Marshall Hamilton, Kent & Co., Ltd., London. 1890.

Foreign Correspondence.

London Letter.

Cephalandra Mackenii.—Cephalandra is allied to Cucurbita and includes about a dozen species, all African, one, C. Indica, known also as Coccinea Indica, extending to India and Malaya. They are Bryony-like climbers with perennial root-stocks, angular or lobed green leaves, dicœcious, bell-shaped yellow or white flowers an inch across and smooth fleshy drupe-like fruits from one to three inches long, usually of a brilliant scarlet color; they contain a large number of ovoid compressed seeds a quarter of an inch long, broad and flattened at one end. They are usually bitter like Colocynth. C. Mackenii is wild in Caffraria, where it scrambles over trees and shrubs and bears large numbers of bright scarlet sausage-shaped fruits three inches long; the leaves are palmately lobed and three inches across. In the garden of Mr. Hanbury, at Mentone, it is a valuable evergreen climber, flowering and fruiting most profusely. Planted against a south wall it covers a space twenty yards square in a few months. I have lately received a box of the fruits from that garden. C. Indica requires warm greenhouse treatment at Kew, and probably C. Mackenii will thrive with it. Cultivators must not overlook the fact that these plants, being dicœcious, must be represented by individuals of both sexes.

Sicara odorifera.—I have lately seen in American papers references to this Cucurbit under the name of "Casabanana," and it is recommended as an edible fruited gourd. It has

been grown in Europe since 1862, when it was introduced into France from Peru and cultivated with success by Monsieur Naudin, the author of the name. The fruit is cylindrical, four inches long by nearly two inches in diameter, of a rich orange-red color when ripe. It exhales a powerful apple-like perfume, and, according to Sir Joseph Hooker, it is used in America as a preservative against the attacks of noxious insects, both from the person and from garments, etc. But I have never heard of its being eaten. A second species, S. atropurpurea, was described and figured in the *Revue Horticole* in 1894 by Monsieur Ed. André, who introduced it from Uruguay. It has fruits five inches long, pale claret-colored when ripe, and apple-scented. Monsieur André recommended it as an elegant green-leaved climber and for cultivation on trellises in southern Europe. The plant grown in the United States as S. odorifera is said to have fruits a foot long. Can any one send seeds to Kew of this American plant, the "Casabanana"?

Hodgsonia heteroclita.—This magnificent perennial Cucurbit has been in cultivation at Kew for at least twenty years, and although it grows with a vigor equal to that of wild plants, it has never yet flowered. It is a native of low elevations in eastern Bengal. Sir Joseph Hooker named, figured and described it in his *Illustrations of Himalayan Plants*, tabs. 1-3, where we are informed that its stems grow to a length of a hundred feet or more, climbing the forest trees from which it sometimes hangs and forms a dense screen of dark green plane-like foliage. The flowers are large, red, brown and yellow outside, white inside, about four inches across and surrounded by a hanging fringe of tendril-like filaments four inches long. They are produced abundantly by wild plants and often may be seen strewing the ground in the forests, although the stems are lost in the vegetation above. It is, perhaps, the most striking in flower of all the Cucurbitaceæ, and I call attention to it here as the conditions in the southern states, say California for instance, are likely to suit it better than those of this country.

Snake Gourds.—Several species of Trichosanthes are worth including among ornamental climbers for the stove. They grow quickly, seeds sown in March producing plants which will be fruitful in July if grown in a moist sunny stove where their stems can be trained along rafters so that the fruits can hang well in view. It is necessary to see that the female flowers are fertilized artificially, as the plants are usually diœcious. At Kew these and similar tropical Cucurbitaceæ are grown in the same house as the Water-lilies, where they are planted in a narrow border and the stems trained to wires over the tank, where, when the fruits are ripe, they make a striking and novel show, hanging like brilliant-colored snakes from the roof. The best are T. anguina, with fruits a foot long; T. colubrina, with fruits two feet long; T. cucumerina, with fruits like small cucumbers; T. palmata, with globose fruits the size of small oranges. They are all scarlet, with streaks of yellow, white and green. The flowers are large, white, with the corolla lobes divided into hair-like filaments.

Crassula aloides.—This very interesting new species of Crassula has been introduced to Kew from the Transvaal, where it was discovered on hillsides in damp places near Barberton at an elevation of from 2,000 to 4,000 feet. According to Mr. E. Galpin, who sent seeds of it to Kew in 1891, it grows to a gigantic size, with a thick, unbranched, Aloe-like stem bearing a rosette of fleshy, lanceolate, bright green, flaccid leaves a foot or more long, nearly three inches broad at the base, and tapering gradually to a long recurved point; they are much like the leaves of an Aloe, and not at all like any Crassula known to me. The flowers are equally remarkable, being borne in a dense corymbose head eighteen inches in diameter on a peduncle three to four feet high, and they are colored cream-yellow. At Kew this plant thrives only when kept in a moist stove and shaded from bright sunshine. No one unacquainted with it would hesitate to call it an Aloe, or some closely allied plant. It excites as much interest at Kew as Richea pandanifolia, an Epacris with the appearance of a Pandanus.

Podophyllum pleianthum.—This remarkable plant was discovered in the island of Formosa in 1881, and four years later it was introduced to Kew, where it flowered, and was figured in *The Botanical Magazine*, t. 7098. It is a near ally of the North American Mandrake, May-apple or Duck's-foot, Podophyllum peltatum, but differs markedly in having a cluster of about a dozen large drooping flowers springing from the axil of the pair of large peltate, lobed, glossy green leaves, and in their deep purple color. Last year some plants of it were placed in a sheltered border outside against a greenhouse, and they have survived the past winter without protection. It is also grown in a cold greenhouse, where it produces leaves a foot in diameter and its odoriferous flowers in August. P. peltatum and the Nepalese P. Emodi, a pink-flowered species, are grown successfully in the open air at Kew, where they ripen their large bright red fruits in autumn. P. pleianthum is a handsome as well as interesting addition to herbaceous plants suitable for cultivation in borders.

Yellow Richardias.—Some cultivators in this country have failed with the two yellow-spathed Richardias, Elliottiana and Pentlandii, though treating them as cool greenhouse plants, and others through keeping the tubers quite dry during winter. My experience is that they must have warm greenhouse, even stove treatment, while growing, and when at rest they should be kept in moist soil, as we keep Caladiums. All tuberous-rooted Aroids, without exception, are better rested moist than dry; indeed, this treatment is in accordance with the conditions under which they grow naturally. Last year I planted six small tubers of R. Pentlandii in a border in a moist stove where tropical Water-lilies are grown, and they grew with exceptional vigor, the tubers being as large as a child's fist when lifted at the end of the season. Our plants were started a month ago in a stove, and they are now growing strongly. With these two exceptions, all the Richardias may be grown in an ordinary greenhouse or frame along with such plants as Pelargoniums.

London. *W. Watson.*

New or Little-known Plants.

Sambucus melanocarpa.

THIS shrub (see illustration on page 135 of this issue), which was long confounded with the red-fruited Sambucus racemosa of high northern latitudes in both the New and Old Worlds, was first distinguished by Gray in the *Synoptical Flora of North America** by its black fruits, more convex clusters of whiter flowers and less pubescent foliage. In habit and in the shape of the leaves the two plants are very similar, and it is practically impossible to distinguish them, except when the fruit is ripe.

Sambucus melanocarpa, which attains a height of five or six feet, is common in the northern Rocky Mountains, where it grows near banks of streams and on the sides of moist cañons usually at elevations of from three thousand to eight thousand feet above the sea-level, and flowers from May until July. It is common, according to Macoun,† from the valley of the Columbia, near Donald, in British Columbia, through the Selkirk Mountain region, growing on the beds of snow-slides and in damp thickets. It is abundant in northern Montana and Idaho,‡ and in the Yellowstone National Park in the neighborhood of the Mammoth Hot Springs; and it was reported by Gray as growing on the mountains of eastern Oregon, southward to the Wasatch Range in Utah, in New Mexico, and on the Sierra Nevada of California.

Sambucus melanocarpa has not yet been tried in our gardens, where, no doubt, it will prove hardy.

Mr. J. B. Leiberg has recently separated from Sambucus

* i., pt. ii., 8 (1884).
† Macoun, *Cat. Can. Pl.*, 539.
‡ Holzinger, *Contrib. U. S. Nat. Herb.*, iii., 229.

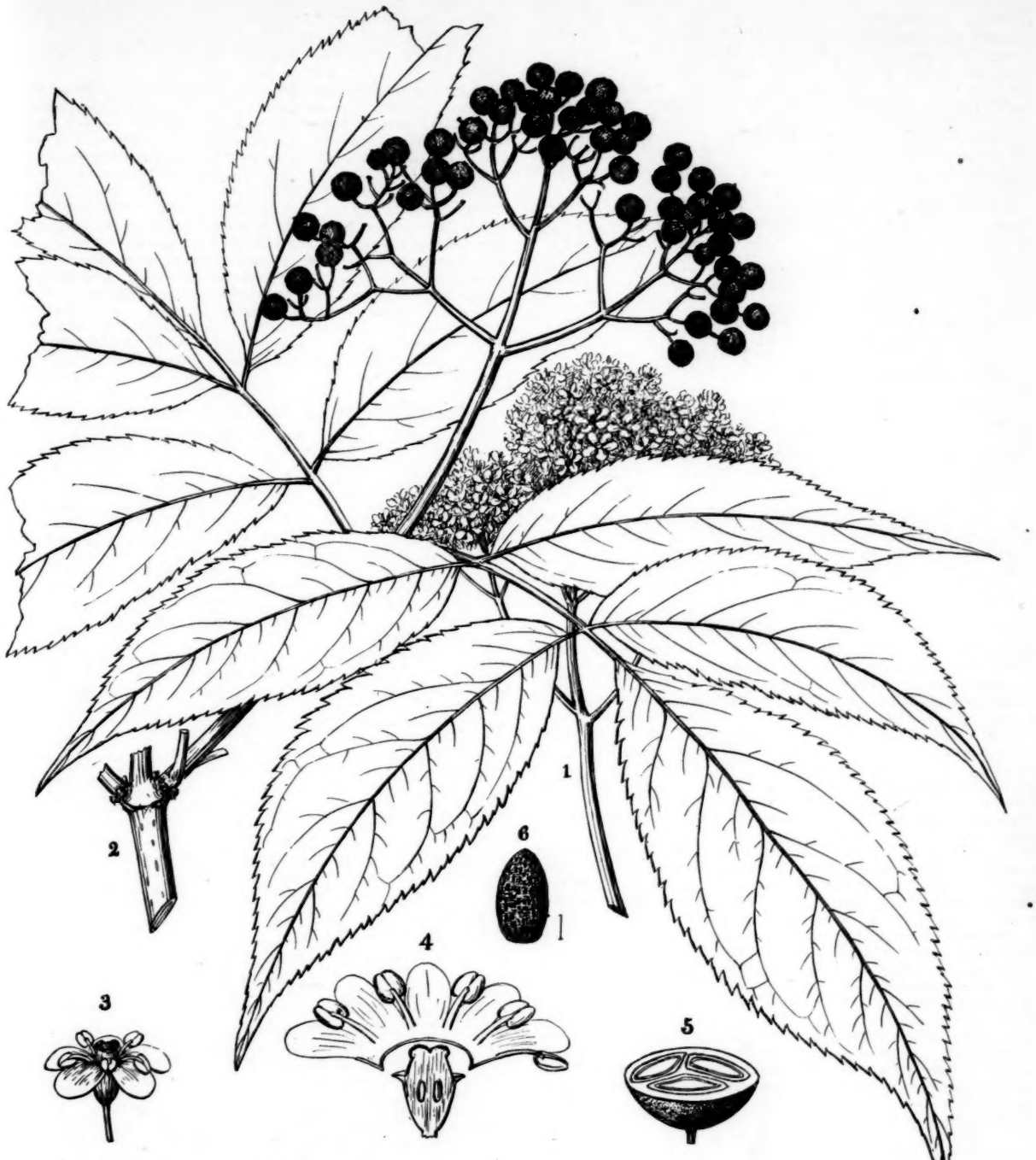

Fig. 16.—Sambucus melanocarpa.—See page 134.

1. A flowering branch, natural size. 2. A fruiting branch, natural size. 3. A flower, enlarged. 4. Vertical section of a pistil, the corolla displayed, enlarged. 5. Cross-section of fruit, enlarged. 6. A stone, enlarged.

racemosa the red-fruited Elder of the high Cascade Mountains of Oregon and Washington, and has described it under the name of Sambucus liosperma,* distinguishing it by its smooth nutlets, those of the red-fruited Elder of the eastern states and of the coast of Washington and Oregon and of S. melanocarpa being transversely rugose. *C. S. S.*

* *Proc. Biol. Soc., Washington*, xi., 40 (1897).

Cultural Department.

Chrysanthemums.

OUR Chrysanthemums intended for specimen plants are now in four-inch pots. We are later than usual this season, as we intend to finish our plants in ten-inch pots. With lessened pot-room the growing season is shortened. When we have used twelve-inch pots we have made the final shift

during May, but this would be too long a season when smaller pots are used to finish them in. By easy stages we shall transfer our plants into the flowering pots by the middle of June. In the mean time the plants will need careful stopping to insure sturdy growth. To get low, well-balanced growth we must begin now to make a foundation. It is not a work which can be arranged by the week or month, but must be attended to daily. There will always be an abundance of leading shoots, and if these are allowed to get away it will be at the expense of the side shoots. A lateral growth is desired at all times, for it is far easier to train the shoots upward than outward.

We pot firmly, but do not pack the soil. Our experience has shown that the roots of large, healthy plants when confined, as they are in pots, increase the bulk so much that but little room is left for water, especially toward the end of the season. Sometimes the roots choke up the drainage, and last season we had to drill holes in the sides of several pots which had become waterlogged. We advise that three holes be made in pots intended for specimen Chrysanthemums; this can be made with a sharp-pointed chisel. In potting it is well to allow at least two inches for water. This makes it convenient to give a top-dressing to some of the less thrifty plants late in the season.

Our stock plants for specimen blooms are still in cold frames. They will soon furnish an abundance of cuttings. All early varieties, such as Madame Bergmann, Marion Henderson and Glory of the Pacific, may be taken during April. May will be early enough for midseason varieties, and June for close planting, where medium-sized blooms only are wanted.

For propagating we use a frame which can be kept closed during bright days, and well shaded. We air thoroughly during the night. Plenty of water is required for the first week or ten days, and the cuttings should not be allowed to wilt.

Wellesley, Mass. *T. D. Hatfield.*

Carnation, Chabaud.

SUMMER-FLOWERING annual Carnations are of quite recent origin, and it is only about five years since the Marguerite strains were introduced and accepted with much caution by cultivators, for it did not seem possible that they could be brought into flower from seed in so short a time. There has not been any apparent improvement on the Marguerite strain since its introduction; on the contrary, there seems an even greater tendency to the production of single flowers than when first sent out. I have noticed that a large proportion fail to flower the first season, and it is evident that the strain has not been perpetuated with as much care as it deserves.

The Chabaud strain of annual-flowering Carnations was therefore a valuable addition. These seem to combine all the good features of the older Carnations, such as free flowering, diversity of color, fragrance equal to the indoor varieties, and good yellow varieties occur quite frequently. This is one of the few sterling novelties that cultivators are always seeking, but do not succeed in finding with all their purchases.

Annual-flowering Carnations should be sown early in the year if they can be sown under glass. Treated in this way the flowers will be most satisfactory, but it is by no means too late to sow now, as there will be rapid growth during the brighter and longer days. We made a sowing last December to see how large it was possible to have them and how early in the summer, but another sowing made now will lengthen the flowering period considerably in the late summer months, when flowers are scarce.

South Lancaster, Mass. *E. O. Orpet.*

California Garden Notes.

Antholyza Æthiopica.—This is a showy bulbous plant common in gardens of southern California, and it blooms freely during the winter months. It belongs to the Iris family and produces a spike of flowers with foliage like that of Gladiolus. It is a native of south Africa, and is commonly known in gardens, I am told, by the name Watsonia, a nearly related genus. The spike of flowers is generally over four feet tall, with as many as thirty flowers on one of its two branches, the flowers of a dull brick color or Chinese red, the prominent anthers and markings in the divisions of the corolla of a deep maroon. The flower is more than two inches long and nearly an inch across.

Scilla hyacinthoides.—This Scilla, a native of southern Europe and Palestine, is rare in our gardens, but thrives well. Its spike of blue flowers is sent up to a height of about three feet from a mass of luxuriant foliage, and bears from 100 to 150 or more light lavender-colored flowers, each nearly three-quarters of an inch across. The long spike of flowers opens in succession, and thus remains in bloom for a long period of time.

Leptosyne maritima.—This is one of the showiest of the flowers that bloom with us in March. The luxuriant mass of succulent foliage is surmounted by a wealth of its rich yellow flowers, which measure fully four inches across and possess a delicacy of texture rare in a composite. Its flowers should be popular for cutting, but it still seems not to have found a place in many American catalogues. Its tuberous roots may be easily handled, or it may readily be grown from seed.

Freesia refracta alba.—This Freesia has been a disappointment to some of its eastern friends who have tried to grow it from seed, expecting it to blossom the first season, as some catalogues have claimed it will do. In my own experience the character of the soil seems to make all the difference in the results obtained. In some of our mesa soils it makes a better bulb and produces finer flowers in one season from seed than it will in several seasons in our rich valley soils, and only experience can determine its needs in this respect.

San Diego, Calif. *C. R. Orcutt.*

American Shrubs for Ornamental Planting.

TWO weeks ago Garden and Forest published an article entitled "American Trees for Ornamental Planting," which was a summary of part of a lecture delivered by Mr. B. M. Watson, of the Bussey Institute, before the Lenox Horticultural Society. I now send a condensation of what Mr. Watson said of certain native shrubs, repeating what was stated in relation to the trees that this does not pretend to include all the American shrubs which are worth planting. Nor must it be inferred that imported shrubs should be excluded from American gardens, for many of them are very desirable. The aim was to call attention to several of our neglected shrubs, with a brief statement of some of their leading characteristics.

Azalea still remains the popular name for the deciduous section of the Rhododendrons. The hardy kinds most generally planted are known as the Ghent Azaleas, which are hybrids of our native Rhododendron (Azalea) calendulaceum, a plant of the southern Alleghanies, rather larger than its hybrids and quite as well worth growing for its brilliant flame-colored flowers. When propagated from seed its flowers show a variety of colors. It needs a rich soil and a deep one, with water in summer and some protection in winter until it is established, and then it is perfectly hardy. Our Pinxter-flower, R. nudiflorum, is rarely planted, but it is well worthy a place in the shrubbery, for its bright pink flowers, which also vary, widely among many seedlings, are most attractive in the early seasons. R. arborescens, also from the southern Alleghanies, has white fragrant flowers slightly tinged with rose, and brilliant scarlet stamens, which appear in early summer. R. Vaseyi is a comparatively new plant, but it is rapidly gaining favor, and it is probably the best of all our native Azaleas because it flowers so early and is less liable to be cut back in the winter. In growth it is regular and bears an abundance of beautiful pink flowers before the leaves expand. This ought to be a capital subject for the hybridizers. All these plants are now to be procured in abundance at reasonable prices since they can be collected easily in the Carolina mountains. R. viscosum flowers in July; that is later than the other species. It is our common Swamp Azalea with white flowers and exquisite fragrance. It naturally grows in wet land, but when lifted from the woods it succeeds admirably in the garden.

Baccharis halimifolia sometimes assumes the form of a small tree, and it is one of the few shrubby plants which belong to the great composite family. It is naturally a beach plant, but it grows well anywhere, and is most interesting on account of its good foliage and its numerous cottony fruits in late autumn. Mr. Olmsted has used it largely in planting the Back Bay fens in Boston, where it is sometimes badly cut back in winter, but the annual growth is rapid and sufficient; indeed, close pruning seems to give the best development of its foliage and fruit. Cephalanthus occidentalis, the Button-bush, is especially desirable because it blooms late in the summer. Usually found in moist places, it is always thrifty in or near the water, but it grows also in well-drained soils. Clethra alnifolia, the Sweet Pepper-bush, is another late-flowering shrub and a charming one, bearing an abundance of snow-white flowers in spikes. It will grow anywhere, even in shade or in poor soil, and is an excellent undershrub. The southern species, C. acuminata, makes a pleasing variety.

Besides the well-known Flowering Dogwood, Cornus florida, which is a small tree, there are many others of our native Cornels which deserve a place in parks and gardens. C. alternifolia is a tall shrub or small tree with a singular and beautiful arrangement of branches. Cornus circinata has large, rich foliage; C. sericea has dark red twigs in winter and is a delightful addition to the Red Osiers, and all the species have abundant flowers, fair fruit, are easily handled and do well in almost any situation. Dirca palustris, the Leatherwood, is a compact shrub of medium height, with small yellow flowers in very early spring, and the peculiarity of its long tough twigs is curious and interesting. Evonymus atropurpureus, as well as E. Americanus and its variety obovatus, are not often planted, and yet they are quite equal to the European Burning Bush, which is an old favorite in gardens. E. atropurpureus is probably the very best of the genus. Hammamelis Virginica, the Witch Hazel, is one of the very best of shrubs for its symmetrical growth and good foliage, while in late autumn, even after frost, its yellow flowers on the leafless branches give it unique value. It is hardly ever planted, and yet where a large and easily grown shrub is required, either for a single specimen or in a mass, the Witch Hazel ought to receive consideration. Ilex verticillata, the Black Alder, is among the very best of our plants for bright berries, which remain in good condition from the time the leaves fall until midwinter. Its foliage and habit of growth are both good, and although naturally growing in wet soil it succeeds quite as well in dry. It is easily handled, too. Wild specimens which show abundant berries can be selected, divided and transplanted, or they can be propagated by seeds. The fruiting capacity is improved by cultivation. A yellow-fruited form is now established well in the Arboretum.

Leucothoë racemosa is a shrub of medium size with white flowers in racemes, which are much better on cultivated plants than on wild ones. The chief beauty, however, of this shrub is its dark green leaves in summer, which turn to fine reds and purples in the fall. Associated with Vacciniums and Zanthorhiza delightful effects in autumn coloring can be produced. Lindera benzoin, the Spice-wood or Fever-bush, shows its yellow flowers before the leaves appear, and is interesting for its early bloom. It is a tall, well-shaped shrub with fine dark green foliage and bright red fruit. Myrica asplenifolia, the Sweet Fern, and M. cerifera, the Bayberry, are both good plants for many situations, and especially useful to cover and hold the soil of slopes on cuttings and embankments, for they will thrive in the poorest soil and under generally unfavorable conditions. The foliage of the Sweet Fern is very distinct, and that of the Bayberry glossy and beautiful, while its fruit is interesting. The Sweet Gale (M. Gale) is adapted to the borders of ponds and brooksides, and the color of its twigs is effective in winter. Nemopanthes fascicularis, the Mountain Holly, is not at all evergreen as its common name might imply. It is a handsome, much-branched shrub, however, with good foliage and fruit. Potentilla fruticosa is a low shrub, bearing loose clusters of showy yellow flowers in summer, and its glaucous green foliage makes a pleasing contrast with other plants in the shrubbery. Prunus maritima, the Beach Plum, is another plant which grows well in sterile soils and exposed conditions, especially on the seacoast, since it is sturdy enough to endure the strong winds that blow over large bodies of water. Under more favorable conditions and when well grown it makes a symmetrical shrub of medium size and sometimes a small tree. It is covered with beautiful white flowers just before the leaves open, and the attractive fruit, ranging in color from amber to bright red, is good enough in many individual trees to eat from the hand, and it is also good enough for preserving. Pyrus arbutifolia and P. nigra are two species of Choke-berries, interesting shrubs of the Rose family, from two to six feet high, which are most effective in masses. The fruit and foliage of the red-fruited form make a happy combination of color in October. The dark-fruited species is a plant somewhat smaller, with fine, glossy deep green leaves, abundant fruit, and is easily grown in sterile soil and in exposed places.

The Sumachs are most desirable for the effect of their foliage in summer and autumn, while the warm color of the fruit and twigs of some of the species gives additional interest to them in the winter. Rhus Canadensis (aromatica) is a low bush which almost creeps over the surface of the ground and is well adapted for use on the edge of shrubberies, and is useful in covering exposed banks. Its numerous small yellow flowers appear in early spring, and its foliage, which is always good, is particularly fine in autumn colors. The so-called Dwarf Sumach, R. copallina, really becomes in rich soil a large-sized, symmetrical shrub with the brightest of glossy green foliage which turns to brilliant colors in autumn, especially if it grows in poor soil. Rhus glabra makes a little larger shrub than R. copallina, and in some ways it is the best of the group, its very long compound leaves making it especially valuable for masses. The Staghorn Sumach, R. typhina, is the largest of the genus, making sometimes a tree thirty feet high. It endures pruning well and can be thus kept at any desired height. It is conspicuous, like the others of the genus, for its bold leaves and brilliant autumn colors. All these plants are strong growers and are at their best when massed together and kept by themselves. They make fine backgrounds for other shrubs or herbaceous plants and they succeed anywhere.

Single Roses are now much sought by planters since the introduction of the Asiatic Rosa rugosa, R. multiflora and R. Wichuraiana has called attention to the beauty of our own wild Roses, which had been overlooked. R. Carolina, R. lucida, R. nitida have been extensively planted in the Arboretum, and they are not only interesting for their flowers in summer, but for their bright red twigs and fruits in winter. They, too, ought to be planted in masses, and occasional severe prunings will be beneficial to the stronger-growing sorts and will keep them in good condition. R. setigera, the Prairie Rose, is a noteworthy addition to the above group, since it does not come into bloom until July. It is a large plant, and can be grown either as a shrub or a climber. Rubus odorata, the Wild Raspberry, is one of our commonest native plants, and is a useful one to grow in shady places. The foliage is not good, but it succeeds where few other plants can grow. Sambucus Canadensis, the common Elder, is a striking shrub of medium size and will grow anywhere, and its bold foliage and abundant flowers after the most of our shrubs have passed their bloom make a striking display. Its fruit is showy, too, and has some culinary value. The Red-berried Elder, S. racemosa, is also a delightful shrub, with flowers in early spring and bright-colored fruit in summer. These are symmetrical plants when well grown, and are suitable for planting in masses in parks or elsewhere. Symphoricarpus vulgaris, the Indian Currant, is one of the very best of shrubs where a low, thick mass of foliage is required. The running stems will quickly produce a verdant covering for sterile soil. The foliage is of the very best, and the slightly drooping habit of the branches makes this plant graceful in the extreme. The fruit is also noteworthy, but not so conspicuous as the white fruit of S. racemosa. Vaccinium corymbosum, the Swamp Huckleberry, or High Blueberry, one of our most ornamental shrubs, is of sturdy growth and excellent habit. The foliage is good all the summer, and in autumn its color is particularly brilliant, not excelled, indeed, by that of any other plant. The fruit is valuable, though it varies greatly in size and quality, and it seems to be the best of the species for experiments with a view to improving its edible qualities. V. vacillans and some of the other Vacciniums are also worth planting. Zanthoriza apiifolia, the Yellow-root, is a dwarf-spreading shrub of compact regular growth, with compound leaves of good form and texture, which are particularly beautiful when they turn to purple and yellow in autumn. This shrub can be successfully grown in the shade, and it is a first-rate one to use on the border of a shrubbery to connect the grass with the taller specimens. Garden and Forest has so often described the American Viburnums and advocated their planting that I will not repeat what has been said about them. There are a dozen species, each one of which is effective at some season, and most of them at all seasons. They have good foliage, good flowers, good fruit and good habit. They can all be propagated from seed, although the germination does not take place usually until the second year, and they all improve under care and cultivation.

Lenox, Mass. *E. J.*

Scillas and Chionodoxas.

Among the early flowers there are none more precious and desirable in the garden than the Scillas and their allies, the Chionodoxas. There is always a woodsy air about these flowers, and I believe they mostly grow in thin woods of deciduous trees. They vary considerably in form of flower and foliage, and though typically they are blue or blue-purple flowers, most, if not all the species, have white and red-purple forms. At this time, when the borders are quite bare of foliage, flowers whose colors harmonize agreeably with the soil are most effective. Yellow flowers are cheerful at any time, but, like the white ones, require a certain amount of green foil to be altogether satisfactory. Spring-flowering bulbous plants have sparse foliage; those that have white and yellow colorings in the flowers are better grown either in grass or under some low-growing herbaceous plants. But the purple

flowers harmonize perfectly with the bare earth, and whether there is a lone plant or a coloring of hundreds in the border there is a natural, harmonious effect very satisfying to any one sensitive to the quieter influences of the garden. Scilla bifolia and S. Sibirica are the earliest to flower, and of these species the Asia Minor or Taurian forms are in advance. The form of S. Sibirica, known now as multiflora, is nearly over before the usual type begins to expand. A very pretty white form of S. Sibirica seems to be earlier than the type, as it is now in flower. This is a graceful habited flower, but not quite equal in purity of color to S. bifolia alba, whose star-like, upturned flowers suggest Chionodoxas. There is also sometimes in the garden a pleasing white Scilla with small hyacinth-like flowers, received as S. amœna. But these white forms are only oddities; the effective ones are the purple-flowering kinds. Those already mentioned, with S. puschkinioides, make a beautiful trio. As the season advances we have a succession of Scillas, such as S. nutans, S. patula, S. campanulata, etc.

The Chionodoxas have not yet a place in all gardens, though they are invaluable in early spring in bare borders, where they will thrive and maintain themselves under hard conditions. We have now, thanks mostly to Mr. Whittall, a rather wide variety of these flowers. The best blue of these are C. Sardensis and the same species with a dark eye. C. Tmolusi may be considered a dark-colored form of C. Lucillæ, which species, while the commonest, is one of the most effective, with large star-like flowers whose petals are more or less deeply tipped with blue in various shades. There are also daintily colored forms of these—very light blue, rosy and white—which are exquisite, not growing in large colonies at present. The large-flowering forms, C. grandiflora and C. Alleni, are much alike, scarcely to be maintained separately in the garden. They may be considered a distinct kind with large, but not as plentiful, flowers as other species. These flowers are a slaty light blue, and C. Alleni has traces of a lighter centre. Grown under glass this centre becomes so pronounced that the flowers resemble those of C. Lucillæ. C. Cretica is another species, but its small flowers are not pure in color, and it is scarcely worth growing. Chionodoxas and Scillas are so closely related that hybrids, even natural ones, are not uncommon.

Elizabeth, N. J. *J. N. Gerard.*

Correspondence.

Notes from West Virginia.

To the Editor of Garden and Forest:

Sir,—One must live in the country all the year round to find how interesting a garden can be made in March with the earliest flowering shrubs and plants. Here at Rose Brake we have done much to make the grove and waste places of the grounds attractive by using our native wild flowers and naturalizing such foreign plants as take kindly to our conditions. Bloodroot, Twin Leaf (Jeffersonia), Dutchman's Breeches and many other easily transplanted wild things have a singular charm, and parts of our Oak grove are thickly carpeted with these plants and Violets. Here and there among the rocks the sweet-scented English Violets have formed colonies which are the first to bloom, followed by Viola cucullata, V. pedata, V. blanda, and here and there a clump of V. sagittata, so that we have Violets from the middle of March to the end of May. The Twin Leaf increases rapidly and its large white blossoms are associated with the still more purely white Bloodroot, which precedes it by a few days. It can be easily transplanted in early spring, and if carefully removed without disturbing the roots it will flower as abundantly in one place as another. This is true of the Dicentras, D. cucularia, D. Canadensis (Squirrel Corn), and many other common flowers which only require a mass of earth removed with the roots when the ground is softened by some spring rains. Crocuses by the hundred are naturalized in the grass on the lawn, and although they do not increase rapidly they certainly do not diminish; they are improved, however, by rich soil and cultivation, as seen by the superior size and beauty of the groups planted in garden beds. We have tried all the species and varieties, except the costly rarities, so that we have the early sorts in bloom here by February, while the later ones make a good show until the middle of April. Of course, there are colonies of Snowdrops, Snowflakes, Chionodoxas, Scillas, Daffodils and Irises naturalized here and there in secluded spots under trees and in rocky soil in the grove, garden and orchard, where they charm us by their unexpectedness as we chance to come upon them in full bloom bending before the rough breezes of March. The evergreen plants have a cheerful look in the rock-garden, and we now have a few flowers from the Hepaticas, Hellebores, Rock Foils, Saponarias and Thymes, while here and there the Saxifragas, Spring Adonis and Eranthis hyemalis are flowering, and, of course, the hardy Candytufts and Creeping Phloxes are a mass of flowers and verdure. Our common wild Saxifraga Virginica is often found blooming early in the spring about moss-covered rocks among Ferns and Rue Anemones, but there is a great number of species and varieties to be had from European plantsmen. I now have a variety of S. cordifolia in bloom, which is labeled Smithii, with handsome foliage, dark green leaves, somewhat liable to decay under the winter protection of forest leaves, and clusters of bright pink flowers. Not to be despised is the common Periwinkle, Vinca minor, for the cheerful green of its new leaves and the bright blue of its flowers as they twinkle in the sun after a shower. The plant, however, is such an aggressive grower that it must be used with discrimination. It can be effectively employed on rough banks and in shady places where grass does not flourish, and here it will quickly kill out less sturdy plants and give a carpet of dark verdure all summer long when out of bloom.

Rose Brake, W. Va. *Danske Dandridge.*

Nursery Notes from Flatbush, Long Island.

To the Editor of Garden and Forest:

Sir,—The quaint old Dutch town of Flatbush, until last year a suburb, but now a part of the city of Brooklyn, contains more than thirty nurseries. Some of these are in groups, and thus conveniently accessible, but only a few can be visited in a day, since they are scattered over the township, which, even in the less remote parts, is but sparsely built up in detached dwellings, with stretches of newly plowed fields and here and there a low, old-time farm-house. At the beginning of Flatbush, near Prospect Park, is the establishment of Charles Zeller's Sons, containing five acres in trees, shrubs, glass houses, frames and beds. For ten years this firm has experimented with Pansies, and they have a choice strain of the very largest sizes and most beautiful colors. Nine frames, five by thirty-five feet, made a showy effect last week, and they sell 10,000 of these plants during spring at an advance of $1.00 to $1.50 a hundred above the market price for ordinary sorts. Hyacinths are being brought on for Easter from bulbs of extra quality ordered direct from Holland. Most of these are still in frames, where they have wintered since October, and are gradually coming into flower. Many are in twelve-inch pans holding a dozen bulbs. In their selected list Gertrude and Charles Dickens were the best deep pink, and Gigantea a beautiful light pink. The best yellow was Ida; La Grandesse was the choice among white ones, with the old Baroness Van Thuill also superior. Czar Peter was the best light blue, and beds of King of the Blue and Leonidas were showy masses of an intensely deep shade of the same color. These are all single-flowering. All this stock is already sold, with only the responsibility to the grower of having it at the best flowering stage for Easter. Altogether, 4,000 square feet of glass are used here for hotbeds, and seven houses 100 feet long. Some large plants of Acacia paradoxa, eight years old, were coming into flower for Easter, valued at $15.00 each, wholesale. Lilies were also being brought on, and a large stock of medium size and standard Azaleas, besides Cytisus Canariensis and small bushy plants of Deutzia gracilis. In a house of foliage plants young specimens of Livistonia rotundifolia looked well, as did Phyllanthus roseo-pictua, with variegated bright pink foliage; the latter is said to thrive well outside and is especially useful for summer planting. Tall plants of the New Zealand Flax Phormium tenax, the comparatively new Dracæna Sanderanæ, and Begonia corallina, probably the best of the older Begonias, and almost continuously in bloom, were also noted. Several old standard plants of the Niphetos Rose which bloom when other white roses are scarce, afforded flowers which have a demand for funeral work. But the specialty here is the Otaheite Orange. One of the houses was filled with plants, now a mass of fragrant bloom, the busy hum of bees adding to the summery effect. On some plants the tiny oranges were just formed, and all will be brought into ripened fruit for Christmas. The plants were grown from cuttings made in February two years ago, and a few specimens left over from last year's stock still show large handsome fruit. Standards are grown a year longer than the specimen plants. During the two years of growth the fruit is cut off each season as soon as it is formed and the plants are trimmed into shape. They are planted out in summer in partial shade. The fruit persists for eighteen months under ordinary conditions with proper watering. The plants seen here were compact and shapely and in perfect health.

At Louis Schmutz's place on Clarkson Street were two houses of Hydrangeas, some of them far enough along to be kept cool now, with the advantage of hardening off and thus lasting longer in the purchaser's hands. Plants of Azaleas and Deutzia gracilis were also held in check. Among odd specimens collected during a long business course were old-fashioned plants of Myrtle, popular for making wreaths for German weddings; an old Maréchal Niel Rose, trained to a trellis and in luxuriant bloom; the flowers sell for $3.00 a dozen, wholesale. One of the ten houses contained tall old Camellias, some of the larger ones crowded to the peak of the roof, fifteen feet above. Two of these venerable trees were covered with flowers and buds, and time's mockery was illustrated in the changed fortune of these once fashionable and costly flowers which now find sale only on the Bowery, for funerals. In this house was also a sturdy plant of Daphne odora, left over from the years when these plants were found in every Camellia-house, and a standard Acacia pubescens, twenty-five years old, which measured eighteen inches at the base of a trunk of almost that circumference for five feet, when it divided into branches under which one could stand, with room to spare. The flower-sprays of this tree-like standard had been cut recently, but the grace of its form and foliage still remained. There were showy plants of the tender Streptosolon Jamesoni, with drooping sprays of rich orange nasturtium-like flowers, Swainsonia, and sturdy well-grown English Primroses and Daisies in frames. Three hundred plants of Crimson Rambler Rose are being forced here for Easter and for Memorial Day. Two-year-old plants, wintered out-of-doors under glass, were brought into heat two months ago. They are in six-inch pots and trained to an arch two feet high. This Rose breaks earlier than any other, and the plants seen here last week carried large clusters of tiny buds with the pink just beginning to show. They are already engaged at $18.00 a dozen, wholesale.

On the same thoroughfare Charles E. Koch has twenty-seven houses, besides 300 sash in frames. In a large variety of bedding plants were 30,000 Geraniums, half of which were the brilliant double General Grant. Even this large stock is but a small part of the Geraniums used in the cemeteries in this district. Eight houses of Carnations supply cut flowers, and 1,000 to 1,200 blooms of Lizzie McGowan alone were cut on some days last winter, and 2,400 spikes of Mignonette were part of the Easter stock last year, when this movable feast came earlier.

George E. Bennett, successor to William Bennett, among the pioneers in this business in Flatbush thirty-two years ago, has fifteen houses devoted entirely to Carnations and Mignonette. Besides the usual market varieties of Carnations, Mr. Bennett has a promising sport from Daybreak. About 1,800 Carnations are marketed daily now, and as many as 6,000 a day during the midwinter holidays.

In a line with the other establishments on Clarkson Street is that of Mrs. Meissner, and here fourteen houses were taken up with Easter stock and bedding plants, all of which had found ready buyers. Two thousand five hundred pots of Lilies, equally divided between L. Harrisii and L. longiflorum, thrifty small plants of Hydrangea Otaksa and of Azalea, were among the Easter stock. Small plants of Pteris densa compacta, grown from spores, made a stretch of beautiful bright green. Here, as elsewhere, plants of the Bermuda Lily contrasted unfavorably this season with those of Lilium longiflorum. The complaint is general that the Bermuda bulbs are each year less satisfactory; that they are not properly ripened, the tops being cut while yet green. Lack of proper cultivation of the bulbs is also alleged to account for their inferior quality. While many of the Lilium Harrisii from Bermuda show defective and worthless buds and spotted foliage, it is quite common for a bulb of L. longiflorum to have two and even three and four stalks, with abundant buds.

Of the five acres of the Messrs. Dailledouze Brothers, 45 000 square feet of ground is covered with glass. Carnations occupy three-fourths of the twenty-four houses, several being in use for the exceptionally large strain of Mignonette grown by this firm, and which has a place all its own in the New York trade. The end of the season is approaching, although there will be cuttings until the middle of June. Closely flowered spikes having a diameter of two to two and a half inches for six inches and more are typical of this strain. With no special preparations for Easter, these houses were none the less interesting, with large collections of all the best Carnations grown to perfection. The selling qualities of William Scott are shown in the fact that one-third of all the Carnations grown are of this variety; Lizzie McGowan ranks next in popularity, with Daybreak third. These bring an equal price, while smaller quantities of the variegated Helen Keller and Minnie Cook, the light yellow Eldorado and the scarlet Hector bring one-third more. Of the regular sorts as grown here Meteor is found to be too single, and the blooming season of three months in midwinter is too short. A good crimson seedling is needed to supersede it. John Burton's new white Carnation is here, a perfectly clear white, the petals cup-shaped and shorter than those of Lizzie McGowan, flowers of medium size, with a good stem. They are almost camellia-like in their whiteness and regularity of form. Alaska has also done well here. Helen Keller is particularly successful here, owing to the soil, Mr. Dailledouze thinks, and perhaps nine-tenths of the carnations sold in New York come from these houses. Minnie Cook they find apt to burst in the calyx. Eldorado flowers fairly well, though not freely, and is a good keeper. The clear light yellow petals, which are deeply serrated and delicately touched on the edges with rosy pink, suggest the flowers of Andalusia, a variety introduced from France seven or eight years ago and discarded in a few years as not free-blooming. The even distribution of the petals of this very full Carnation helps to make a pleasing flower, and its color is charming. Bouton d'Or has proved satisfactory here, but Buttercup is too shy during winter, though it is said to be entirely satisfactory in this respect in some parts of Connecticut. Eldorado is said to do well out-of-doors, and also to flower well under glass in summer, as do William Scott and Lizzie McGowan, while Daybreak is not so good in summer, Minnie Cook only fair, and Helen Keller does not flower at all. Among new carnations being tested are a silver-pink seedling not yet named, and known as No. 3. The light outer petals shade deeper to the centre and the flower has a spicy fragrance. The calyx, stem and other characteristics are altogether superior, and its uniform good qualities won a certificate of 100 points from the American Institute recently. A new deep rich crimson under trial promises to make good the weak points of Meteor in flowering early and late in the season. Cuttings made at Christmas for next season's flowers will be planted out from the middle of April to the first of May, and brought in late in August. Flowers are cut from September until July, 1,000 to 2,000 a day now, and for Christmas and New Year's, when they can be held on the plants for a week or two, from 8,000 to 10,000 every twenty-four hours. They are allowed to develop freely before cutting, but not to be overgrown, and are kept cool twelve to eighteen hours before delivering to buyers. The propagation of Chrysanthemums for cut flowers is just begun.

The adjoining houses belong to Joseph Gard, who, fresh from a wide experience in Switzerland and France, in 1862 established a nursery of twenty-five acres of trees and shrubs on this site in partnership with the elder Dailledouze and Zeller. After the dissolution of the firm and division of the ground, Mr. Gard adapted his business to trade demands, and for many years grew Marie Louise Violets with marked success. His output some years ago averaged 16,000 a week, and $3.00 a hundred was the uniform price paid him for all his stock throughout one season. Later, $2.50 was obtained from November until New Year's, when the price fell to $1.25, and in March to sixty cents. Within the past four years Violets have done indifferently here, and Mr. Gard notes a similar want of success with Roses in Flatbush, owing, he thinks, to changed atmospheric conditions. He states that he used to gather Tea Roses by the bushel out-of-doors in summer, and now these plants do not flourish at all. Bedding plants are the main crop here, and Verbenas a specialty, 25,000 of these plants being sold during spring.

Returning to the heart of the town by way of Lenox Road, Mr. G. Messeberg's place may be visited, established twenty-nine years ago by the father of the present owner. Thirteen well-kept houses, besides many frames, were filled with Easter and bedding plants. The Longiflorum Lilies grown here this year are from Japanese bulbs, and the experience of Mr. Messeberg shows that these produce more and better flowers than the same sized bulbs of L. longiflorum from Bermuda, and he thinks it is only a question of time when Bermuda bulbs will be discarded. He considers L. longiflorum superior to L. Harrisii for a late Easter, as the flowers have more substance and keep longer, and are, besides, more graceful, while a few hot days wilt Lilium Harrisii. Bulbs of the latter from Bermuda cost Mr. Messeberg $20.00 a thousand, and those of L. longiflorum, from Japan, $38 00. But these more costly ones can be depended upon for a full and healthy crop, and the flowers sell for two cents apiece more at wholesale. Hydrangeas, Cinerarias and the best standard sorts of Azaleas filled several houses. The best red Azalea was Madame Van der Cruyssen, the richly colored flowers having fluted edges; the double Vervæneana and the single Comte de Chambord were the best pink; Bernard André alba and Raphael were among

choice white kinds, with Baroness de Weir best of all. Self colors of pink and white are most in favor. An entire house is filled with the best varieties of English Pelargoniums, and the new Souvenir du President Carnot Rose is grown in large numbers. The crop of 35,000 Pansies is already sold.

In the houses of C. Wocker, just beyond, were forced plants of Deutzia gracilis and superbly flowered Hydrangeas, many of the heads more than a foot across. There were plants of the showy Metrosideros and the uncommon and beautiful Choisya ternata, with orange-like flowers, and the deep green foliage almost equally fragrant.

New York. *M. B. C.*

Notes.

The Civil Service Commission of New York city will hold an examination for the position of gardener and gardener's apprentice, at its office on the corner of Centre and Franklin Streets, at ten o'clock in the morning of April 22d. Applications may be addressed to S. William Briscoe, Secretary, New Criminal Court Building, New York city. Candidates must be citizens of the United States, and candidates for the position of gardener's apprentice must be between the ages of eighteen and twenty-one years.

We learn from a correspondent in Copenhagen that the ladies of that city last month collected an interesting exhibition of Orchids in flower as well as paintings and engravings of the native Orchids of Denmark, and of exotic species, besides pottery decorated with Orchid designs. The exhibition was most successful and attracted large numbers of visitors, including the entire royal family. The aim of the undertaking was to raise money to help the construction of a building in Copenhagen for the exhibition of work exclusively by women.

Professor D. T. MacDougal writes to *Science* that the project for establishing a botanical laboratory in the American tropics has made such progress that a commission has been organized for the selection of a site for the proposed laboratory and for ascertaining how far the coöperation of American and British botanists can be enlisted in the scheme. The commission will select a location conveniently placed with reference to towns or settlements and in easy connection with a marine substation, and yet near the presence of a body of undisturbed tropical vegetation. The American members of the commission are Professor Douglas Campbell, of Stanford University; Professor J. M. Coulter, University of Chicago; Professor W. G. Farlow, Harvard University; Professor D. T. MacDougal, University of Minnesota. The committee will be ready to make an informal report to the American Association at Detroit, and the British Association at Toronto, at their meetings in August.

In Bulletin No. 9, which discusses the rate of increase in the cut-over timber lands of Minnesota, we find, among miscellaneous notes, that the oldest White Pine noticed by Mr. H. B. Ayres had 348 rings on the stump and a diameter of thirty inches. The top of this tree was broken off at 114 feet above the stump and sixty-eight lineal feet of log timber were taken from it which scaled 1,400 feet, board measure. A larger tree than this, although one not as old, was forty-eight inches in diameter on the stump and contained 4,050 feet, board measure, of log timber. This tree with several large ones near by which grew on fertile soil averaged about 253 years old when cut. When fifty years old they average only eight inches in diameter, but at 150 years of age they were adding about half an inch to their trunk diameter every year. The largest Norway Pine noticed was 330 years old with a stump diameter of thirty-two inches and a height of 103 feet. Seventy-two lineal feet of log timber taken from it scaled 1,830 feet, board measure.

Ordinary Barn-yard Grass, Panicum Crus-galli, is a coarse annual, occurring in damp places or cultivated ground, and often becomes a troublesome weed. Among three kinds of Millet recently received by the Massachusetts Experiment Station is a variety of this Barn-yard Grass which seems to be botanically identical with our plant, although it differs from it somewhat in its habit of growth. Professor Brooks, of the Massachusetts Station, recommends it enthusiastically as a fodder crop for feeding green or for the silo, and says that it may yield ten or twelve tons of fodder to the acre, or if thinly sown in rows a foot apart it will produce from fifty to ninety bushels of seed. In a newspaper slip lately issued by the Maine Experiment Station it is said that while this may be a valuable acquisition, farmers ought to be cautioned about procuring the seed which is sold as Japanese Millet. Certainly the seed of our P. Crus-galli should only be purchased of dealers who will be sure to furnish the seed of the Japanese variety, since the mischief which would be wrought by sowing the seed of the ordinary Barn-yard Grass is self-evident.

Mr. F. W. Burbidge read an interesting paper at Manchester last month on the "Culture of Hardy Bulbs in England." He stated that England paid half a million dollars every year to Dutch bulb growers in spite of the fact that it had been proved that the home supply of Narcissi, Crocuses, Tulips and others could be easily grown in favored parts of England, and with special care in the market-gardens about London and the Isle of Wight, where they would be the most profitable of crops. Even in Holland and other places where bulbs have long been specially cultivated success is only assured on plots with a suitable soil, and that such soils can be found at home is proved by the fact that hundreds of acres are already in cultivation both in Great Britain and Ireland. The thing to be remembered is that the soil which grows the best Hyacinths is not the best for Narcissi nor for Tulips; and, again, land however good will not grow bulbs year after year without enrichment or recuperative crop rotation. In fact, Mr. Burbidge said that it was not soil or climate in Holland which made that country preëminent for good bulbs, but it was the methodical thrift and skillful industry of the people.

The discovery that the pith of the corn stalk can be used in the construction of war vessels is likely to be of benefit to agriculture in more than one way. The chief use of this pith is for a packing between the inner and outer shells of the vessel so that when pierced by a projectile it will absorb water and swell so rapidly as to close the opening before the vessel leaks to a dangerous extent. Experiments with this pith have been so satisfactory that it has been adopted in the construction of all our new vessels of war, and European nations have commissions for investigating the same material, so that the use of corn pith will make a market for what was once a waste product. In the process of extracting this pith the blades and husks are removed and the stalks are cut into small pieces. When the pith is taken out from this stalk the remainder is ground up into a flour-like substance which resembles bran. Some experiments with this "new corn product," as it is called, have been made at the Maryland Station with the remarkable result that it is found to contain eleven per cent. more of digestible matter and two per cent. more of digestible protein than the whole fodder does when shredded. It contains as much digestible matter as the corn blades and more total digestible matter and half of one per cent. more protein than Timothy hay. It does not contain as much digestible albuminoids as wheat bran, but it equals that food in the total amount of digestible matter. It keeps as well as bran or cotton-seed meal. It is in such condition that it can be uniformly mixed with any ground grain, and when used as a base it is possible to make a complete and normal ration for stock in one bulk without the necessity of feeding grain and hay separately. Animals fed upon such a ration eat it with relish, and keep in normal condition. Since there is only one pound of pith to fourteen pounds of blades, husk and stalk, this new material amounts to a very considerable portion of the fodder.

Dr. Robert Hogg, the eminent pomologist and writer on various horticultural subjects, died on the 14th of March, in London, at the age of seventy-nine years. Dr. Hogg was a graduate of the University of Edinburgh. Being devoted to the study of natural science, and especially of botany, he acquired the knowledge of practical horticulture, and soon developed a taste for pomology, which enabled him later on to prepare the valuable *Fruit Manual*, a standard descriptive work. He began the publication of a larger work on British pomology, but only one volume, which treated on the Apple, was published. Dr. Hogg was a voluminous writer on various horticultural subjects, was for many years the editor of the *Journal of Horticulture*, a conspicuous member of the Pomological Society and Secretary of the Fruit Committee of the Royal Horticultural Society.

Philip Wickens, who for forty years was connected with the nursery firm of Ellwanger & Barry, died at Rochester on the 29th of March, in the sixty-ninth year of his age. He was born at Rotherfield, Sussex, England, and came to this country in 1851, where he soon became an authority on hardy fruits. He was an expert in many other branches of horticulture, a born gardener and an enthusiastic and discriminating lover of natural beauty. He was a retiring man, devoted to his special work, but of a genial sunny temper, which helped to brighten the lives of his associates.